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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/822,191	04/02/2001	Takeshi Shishido	35.C15262	7314

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FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER

PADGETT, MARIANNE L

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 07/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/822,191

Applicant(s)

SHISHIDO ET AL.

Examiner

Marianne L. Padgett

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 2/25/05 & 3/24/05.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,6,8,10-15,20,22 and 24-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,6,8,10-15,20,22, 24-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/24/05 has been entered.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1, 6, 8, 12-15, 20, 22 and 26-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shoichi Tanimura (JP 04-136175), optionally in view of Ikeda et al (JP 8-299748), and further in view of Tomoyasu et al (5,900,103).

Note with respect to the "heating element...in an exhaust line," this phrasing is inclusive of such an element enclosed or within the exhaust line or pipe (illustrated by Ikeda et al's electric heat coils 64, 72, 88, etc.), or such a heater incorporated as part of the line, for instance within

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the wall of the exhaust path or line, as illustrated in Shoichi Tanimura's Figures 2 or 4. Given applicant's example shown by reference No. 13a-c in Figure 1, the examiner suspects that the former is the intended meaning, but the present phrasing is inclusive of both options. The "in" phrasing is found in original claims, so it will not be considered New Matter.

The Japanese references to Shoichi Tanimura and Ikeda et al, were discussed in the action mailed 5/25/04 (Sections 11 and 13) and 12/28/04 (Section 6) and the translation is now available for Tanimura. For the claims as now written, Tanimura supplies the teaching of reacting unreacted gases in the exhaust line coming from plasma or thermal CVD chambers for the purpose of preventing dust production in the exhaust line and preventing deterioration of the vacuum pump. Reaction means in the exhaust line may include use of heaters to cause thermal reactions as illustrated in Figures 2 or 4, or RF electrodes to cause plasma reactions as in Figure 3, whereas page 8, notes that the later may also use the heater option with the electrodes. As noted above, as shown in Tanimura, the heating element 13 is "in" the exhaust line consistent with the claim language. In the translation, see the claims; page 5, especially second full paragraph; pages 6-9 for descriptions of relevant Figures 2-5. Although, Tanimura does not discuss the material used for the illustrated heating coils, they are typically metal to enable electrical conduction, hence metal would have been obvious for its conventional use therein.

Alternately, Ikeda et al who is employing heat traps to decompose and deposit unreacted gases in exhaust from CVD processing, may employ heating coils inside the exhaust pipe as previously discussed and illustrated in Figures 2-3, 6-7, 9 and 13, where there is teaching of the electric heating coil including stainless steel in its composition or batteries with heating wire employing tungsten conductive members ([0020] and [0031-32]). Therefore, it would have been

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obvious to one of ordinary skill in the art to employ heating elements inside the exhaust pipeline as taught in Ikeda et al, in the plasma processing techniques of Tanimura et al, as it has been shown to be equivalent effective for like purposes of preventing pump damage.

Tanimura, optionally considering Ikeda et al, differs from the present claims by not teaching a "plasma blocking means" of an electrically grounded second metal, between the processing space and the metal heating element. It is noted that the illustrated plasma apparatus of Figure 5 in Tanimura has an elbow bend in the exhaust line that will cause physical blocking of at least some plasma flow before arriving at the reaction inclusive means, but it is neither metal nor grounded.

Tomoyasu et al teach a parallel plate plasma treatment process for semiconductive wafers analogous to that of Tanimura's Figure 5, where the plasma may relate to etching or CVD or sputtering, where it is taught to employ a baffle plate arrangement, where plural holes in the plates are configured to adjust flow of exhaust and also via a gradient electric field to prevent discharge in the holes and prevent plasma from flowing inward under the baffle plates. The plate or inner portion of the baffle may be made of metal, such as Al or stainless steel, and different options for preventing the plasma (applying H.F. power to upper electrode or susceptor) may be employed, where the potential of the baffle may have the same as that of the susceptor or as that of the upper electrode, to effect different plasma distributions. See the abstract; Figures 8, 12-13, 15-17, 29-33; col. 1, lines 5-10; col. 10, lines 36-col. 13, line 41, esp. col. 11, lines 1-15 & 25-40, plus col. 12, line 40-col. 13, line 4; and col. 16, lines 4-45. While Tomoyasu et al teach various different possible potentials employed on the baffle, they do not discuss grounding it per se, but they note that their broader aspects are not limited to specific details (col. 19, lines 26-30), and as

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paired parallel electrodes are frequently employed with one powered and the other grounded, it would have been obvious to one of ordinary skill that the applied baffle potential could have been at ground, since it could be the same as either electrode; which would have been different that the overall plasma potential.

It would have been obvious to one of ordinary skill in the art to use baffle arrangements as taught by Tomoyasu et al with Tanimura's plasma apparatus/process, due to the improved flow control, prevention of abnormal discharge and preventing chamber contamination, taught to be achieved therewith, as they would have been beneficial in Tanimura's plasma also, and consistent with their purposes.

4. Claims 10-11 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanimura, optionally in view of Ikeda; and further in view of Tomoyasu et al as applied to claims 1, 6, 8, 12-15, 20, 22 and 26-30 above, and further in view of Kanai et al (5,976,257), as previously described in Section 13 of the action dated 5/25/04.

The above combinations uses metal baffle plates with holes to block plasma entrance into the exhaust line, but does not discuss alternative shapes such as meshes or spiral windings, however Kanai et al (257) has been seen to teach metal mesh as equivalent to perforated plates for preventing leaks of plasma energy creating unstable plasma at exhaust ports, hence shows an equivalent use to that of Tomosayu's baffles, where the plural holed baffle and the perforated plate are synonymous or equivalent structures. It is also noted that meshes are generally made of wires, and that Tomosayu's Figure 32 creates a spiral-like structure via layers rather than wires, but as wire structure and layer structure that prevent control exhaust passage may be employed equivalently, it would have been obvious to one of ordinary skill that creating relatively

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equivalent to structured flow passages via wire or layers would have been expected to have been equally effective, hence obvious variations on the same theme.

5. Other art of interest includes Foster et al (5,370,739), who also teach use of baffles that may have electrodes attached to their upper baffle, in a wafer processing apparatus (col. 4, 6 and 12-13), where the electrodes are used for plasma cleaning the apparatus, the baffles may be Al, have gas input ports in them, and may be electrically connected to RF power supply, hence has similar teachings to Tomoyasu et al.

Other patent/references with teachings of interest on exhaust line flow control from the processing zone, include Zhao et al (6,189,482 B1), Carducci et al (2005/0003675 A1), Li et al (6,403,491 B1), and Koai et al (6,106,625), while Mundt (5,137,701) has further teachings on temperature control of chemical reactions in reactive traps in effluent flow (exhaust) lines.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne L. Padgett whose telephone number is (571) 272-1425. The examiner can normally be reached on Monday-Friday from about 8:30 a.m. to 4:30 p.m..

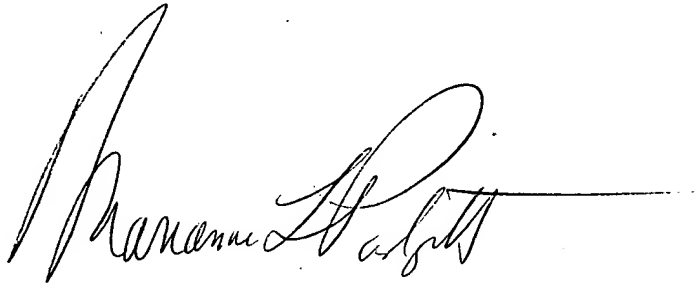
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached at (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

M.L. Padgett/dh
June 14, 2005

June 29, 2005

A handwritten signature in black ink, appearing to read "Marianne Padgett", with a long horizontal line extending to the right.

**MARIANNE PADGETT
PRIMARY EXAMINER**